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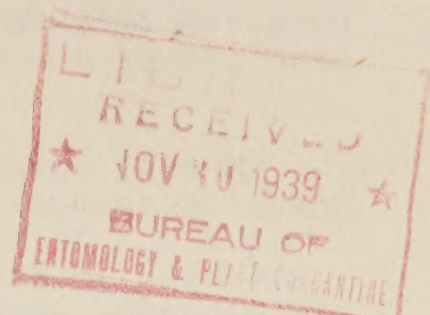




PROCEEDINGS OF THE CONFERENCE ON GRASSHOPPER  
CHINCH BUG CONTROL PROBLEMS.

FONTANELLE HOTEL,  
OMAHA, NEBRASKA.

December 4 & 5, 1936.



The meeting was called to order by Prof. Myron H. Swenk, who after briefly reviewing the reasons for calling the conference and outlining the objectives of the conference called for nominations of a chairman.

Upon motion of C. J. Drake, Mr. W. B. Banning, Secretary of Agriculture of Nebraska and Mr. Ray Murray, Secretary of Agriculture in Iowa were elected co-chairmen by a unanimous vote.

By mutual agreement, Secretary Banning assumed the chair and immediately appointed O. S. Bare, F. E. Whitehead and G. C. Decker as co-secretaries.

The chair then requested M. H. Swenk, C. J. Drake, W. P. Flint, A. L. Strand, E. L. Chambers, E. G. Kelly and C. F. Stiles to serve as members of the Resolutions Committee.

Chairman Banning: We will now hear the reports, by states, of the 1936 grasshopper control campaigns.

The reports of the 1936 campaign and the outlook for 1937 are here combined so as to simplify the minutes of the conference. Statistical information is largely omitted as it is all contained in the summary tables presented by Dr. J. R. Parker.

Colorado, Sam McCampbell: Colorado, apparently, is a grasshopper state as it ranked second in Dr. Parker's report of grasshopper losses in the United States from 1925-1934. Estimates show that hoppers destroyed 10% of the beet and other crops. The situation is more threatening for next year and Colorado may need twice as much bait as was used in 1936. A heavy infestation of Dissosteira longipennis Thomas on 2 million acres of range land constitutes a serious threat. This year from 10 to 20% of the winter range was destroyed by grasshoppers.

Illinois, W. P. Flint: The infestation extended over 51 counties which lie in the best corn-growing area of the state. An estimate of the damage this year, though not entirely accurate, would be about 14 to 16 million dollars. Eggs are now twice as abundant as last year and much more bait may be needed in 1937. Predators are apparently destroying about 5 or 6% of the eggs.

Iowa, G. C. Decker: Iowa suffered its greatest outbreak of recent years in 1936. We operated 52 mixing stations; 18,200 farmers attended demonstrations; 21,550 farmers used bait. It was estimated that 2,444 tons of bait would be needed; however, 4,463 tons were used and much more would have been used if the drought had not been so discouraging to the farmers. It is estimated that four times as much bait may be needed next year but weather conditions at hatching time will largely determine the actual need which may easily fall anywhere between 5 and 25 thousand tons.

Kansas, E. G. Kelly: This year grasshopper campaigns were conducted in 104 of Kansas' 105 counties, and severe damage was reported in over 80 counties. For the most part, state and federal funds were used to purchase white arsenic and sodium arsenite and the farmers themselves provided the rest of the ingredients for the bait. A total of 59,314 farmers or approximately one-third of the farmers in the state used bait in 1936 and it is estimated that 2,269,296 acres of crops were protected from grasshoppers by the use of poison bait.



MINUTES OF THE CONFERENCE

AT THE UNIVERSITY OF CHICAGO  
CHICAGO, ILLINOIS

December 2 & 3, 1955

The meeting was called to order by Prof. Frank B. Rowell, who also presided. The purpose of the conference was to discuss the progress of the work of the Institute of Mathematics and Statistics at the University of Chicago.

Prof. Rowell then presented a report on the work of the Institute during the year 1954-1955. He mentioned that the Institute had received a grant from the National Science Foundation for the year 1955-1956.

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The amount of bait that may be needed in Kansas next year has been estimated at 4,700 tons which is about the same amount as was used this year.

Minnesota, T. L. Aamodt: Light to moderate damage in some counties was forecast for this year but the situation was slightly underestimated. Minnesota had an excellent example of how a permanent organization and a reserve supply of bait can be used effectively to get rapid action when it is most needed. Three phone calls relative to grasshopper damage came in one morning shortly after the hoppers had hatched. A meeting of the local committee was called immediately and bait left from last year was trucked into the infested area from nearby counties. As a result of this rapid action many farmers were scattering bait within 48 hours after the first call was received and thus the hoppers were effectively checked before they moved out of their hatching grounds into the crops. We estimate that in the last 5 years we have saved \$28,000,000.00 worth of crops by the proper use of bait. The prospect for 1937 is by no means alarming, but can be regarded as threatening. The outcome, of course, will depend upon weather conditions next spring. This year predators seem to be less abundant than at any time in the last 10 years.

Missouri, Leonard Haseman: Grasshoppers have been of some importance in Missouri for several years but up until this year the state has always managed to handle the situation without federal aid. The greatest damage occurred in the northwest half of the state. If weather conditions next spring are favorable for the hoppers, Missouri will probably need considerable more bait than was used in the state this past year.

Montana, A. L. Strand: The current grasshopper outbreak in Montana began in 1933. State, federal, local and P.W.A. funds were used to purchase bait this year. In all about 3,500 tons were used, of which about 2,750 tons were purchased by counties and farmers. Grasshoppers increased in Montana during 1936 and conditions as faced for 1937, while not so critical as in 1934 presents a problem which cannot be handled by the local governmental agencies. In addition to the 1,200 tons now in storage we may need an additional 6,600 tons. We also have a serious grasshopper problem on the range that needs and should receive some consideration.

Nebraska, O. S. Bare: The hoppers appeared late in 1935 and little bait was used and consequently we had a considerable increase this year. A late hatch of M. mexicanus and a few M. bivittatus in August and September, 1936, gave some trouble. About 500 tons of bait were used to protect fall wheat and rye seedings. Eggs are now much more abundant than they were a year ago and much more bait may be needed in 1937.

Oklahoma, C. F. Stiles: Grasshoppers were unusually destructive in Oklahoma this year. Practically all kinds of crops were damaged. In cotton fields where the hoppers destroyed the terminal buds the whole plant was ruined. Although it was difficult to estimate losses it seems certain that over \$6,000,000 worth of crops were destroyed. It has been estimated that \$1,000,000 in crops were saved at a cost of about \$75,000. The hoppers spent most of the summer in the trees and egg laying did not begin until September. The survey indicates that Oklahoma may need about two-thirds as much bait as we used this year. Predators appear to be destroying many eggs this fall.

South Dakota, L. I. Thompson: Most of the trouble occurred in the central part of the state and in the Black Hills region. Many farmers in South Dakota feel that the grasshoppers did more damage than the drouth. This was particularly true on the range lands where fall and winter pasture suffered heavy losses. Not much crop was harvested but a lot of fodder was saved. South Dakota had plenty of hoppers this year but apparently they did not



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**Missouri.** E. L. Kessler, State Game Warden, reports that the situation was slightly better than last year but the situation was still very serious. Missouri had an excellent example of how a game warden organized and a reserve supply of bait can be used effectively to get birds out of the woods. Three thousand birds were released in the state and a reserve supply of bait was used. A number of the local committees were called immediately and told that last year was the worst year in the history of the state. As a result of this rapid action many farmers were restoring their birds within 48 hours after the first call was received and the birds were effectively checked before they moved out of their hiding places into the open. The estimate for the last 5 years we have made \$25,000,000 worth of crops by the proper use of bait. The prospect for 1937 is by no means alarming, but can be regarded as promising. The estimate, of course, will depend upon weather conditions next spring. This year probably seems to be less than any time in the last 10 years.

**Minnesota.** Game Warden Kessler reports that the situation in Minnesota for several years has been very serious. The state has always managed to handle the situation without too much loss. The greatest damage occurred in the northwest part of the state. It is now possible to get some birds out of the woods for the winter. Minnesota will probably need considerable more bait than was used in the state this year.

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Wisconsin, E. L. Chambers: There was little damage in northern Wisconsin this year but heavy losses occurred in the southwest counties where grasshoppers had not been abundant heretofore. The loss was roughly estimated at 3 or 4 million dollars. We used about 700 tons of bait, most of which was made by the Wisconsin Sawdust and Whey formula. Indications are that Wisconsin may need twice as much bait next year.

Wyoming, C. L. Corkins: Grasshoppers did the most serious damage to crops in the irrigated areas. It was therefore not difficult to separate grasshopper and drouth losses. A total of 3,154 farmers used some bait this year. The damage to crops in the irrigated region was estimated at \$1,500,000.00 and we figure that a poisoning campaign costing \$52,000 saved \$1,162,000.00 in crops. That makes a net saving of \$11.61 for each hundred pounds of bait used after cost of bait was deducted. Grasshopper damage on the range exceeded drouth damage. Grasshopper damage on the range was estimated at \$1,500,000.00 and drouth damage at \$1,200,000.00. Mr. Corkins discussed the range problem at some length and asserted that three-fourths of a million dollars spent on the range would have eliminated large expenditures for relief and prevented the shipment of livestock out of the area.

Mr. Banning: Any other remarks?

Mr. Flint: Reported on the occurrence of some burning to soy beans and corn where large quantities of bait containing sodium arsenite or sodium arsenate was used. He also reported good results with oil baits in which Paris green and cheap, fresh oil of 20 to 30 S. A. E. rating was used.

Mr. Chambers reported that tobacco was greatly lowered in grade by only slight burning and this method of scattering bait had to be given special attention.

Mr. Banning: We will now have a summary of the grasshopper campaign in the United States for 1936 by Dr. P. N. Annand of Washington, D. C.

Dr. Annand: The state reports you have just heard seem to adequately justify the \$250,000.00 appropriation which Congress made late last spring. This year's campaign, however, is an excellent example of how it should not be done. In the first place the appropriation came too late and the situation was out of hand when we started. All of the appropriation was spent for materials. About 9,600 tons of bran and 190,000 gallons of sodium arsenite were distributed to 13 states most of which lie in the Great Plains area.

At this point the group gave Dr. Annand and his associates a unanimous vote of thanks for the expedient manner in which they handled state requests and started bait materials moving as soon as the appropriation was made available.

Mr. Banning: We will now have a report from Canada by Mr. L. C. Paul.

Mr. Paul: The outbreak in western Canada has been more or less continuous since 1932. The control measures used are somewhat the same as those used in the United States. Mr. Paul gave a summary of the interesting experience of ranchers in the Nicolet Valley in British Columbia who have through cooperative surveys and control methods prevented outbreaks over a period of years. In general the grasshopper population in Canada has been on the decline since 1934. Anticipated damage in 1937 is confined to a small area south of Winnipeg and a larger area commencing in the southwest corner of Manitoba and extending northwest for approximately 275 miles and throughout the prairie areas and into the park areas of Saskatchewan and Alberta. In this area the hopper population has shown an apparent increase for 1937.



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Mr. J. L. Thompson: There was little change in northern Wisconsin this year but heavy losses occurred in the southwest corner. The losses were estimated at 2 or 3 million dollars. The loss of bait, most of which was made by the Wisconsin Game and Fish Commission, indicated that Wisconsin may need twice as much bait next year.

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Mr. Banning: Mr. Carlos Rosenbusch will now tell us something of the grasshopper problems of Argentina.

Mr. Rosenbusch: Grasshoppers have been a problem in Argentina for over 50 years. The life history of Schistocerca paranensis Burm., the principal species, is different from the species you have here. They pass the winter as adults and in the spring they swarm into the crop land supposedly from the northern wooded areas. Large annual losses occur. The degree of damage depends upon the time of swarming. This year it was late and corn is expected to suffer more than the small grain crops. The government has just granted about \$3,000,000.00 for grasshopper control work. Part of this will be used to purchase 8,000,000 meters of zinc barrier and 10,000 flame throwers. A large portion of these funds are paid out as premiums for grasshoppers and grasshopper eggs collected by the farmers and presented to a government agent for destruction. The government is now considering the creation of a grasshopper institute.

Mr. Banning: The next topic on our program is a report on the effect of the 1936 grasshopper outbreak upon wildlife by Logan J. Bennett of the U. S. Biological Survey.

Mr. Bennett: Our Bureau in cooperation with the Iowa State College and the State Conservation Commission kept one man in the field during the campaign studying the effect of the grasshopper outbreak and the poisoning program upon wildlife. Over 600 farms were under observation, 400 of which were moderately or heavily baited. Numerous reports of wild and game birds and mammals being poisoned were traced down and only two of the reports may have had some basis of truth. On one farm two young English sparrows may have been poisoned by a quantity of bait in a farm yard. On another farm a few white footed mice were reported as poisoned where a large amount of bait was scattered around a hay stack. On not a single farm where poison bran had been used according to directions did our field man find a domestic or wild animal poisoned. On the other hand nearly all birds except the mourning dove and the wood-peewee included grasshoppers in their diet. Grasshoppers made up from 50 to 90% of the food of the crow, blue jay and some other birds. Skunks, harvest mice, and some other mammals also destroyed many hoppers. In much of southern and western Iowa food and cover two necessary elements in the habitat of any living creature, for game birds and mammals were eliminated in an efficient manner by grasshoppers, coupled with the drouth. In 18 counties quail and pheasants are going to be hard put to find food and cover this winter. Game mammals such as the cottontail, fox squirrel, opossum and raccoon, which rely to a large extent upon plant food will suffer likewise because of a reduction of the food supply by grasshoppers. Some other fur bearers, however, probably profited by feeding on grasshoppers this summer and will not be affected adversely this winter.

Mr. Swenk: All county agents in Nebraska were watching for cases of poisoning. There were some wild rumors but none could be verified. In one or two cases a few birds were killed where poison was placed out in large quantities to kill rabbits.

Mr. Farrar: Reported on an experiment to determine the effect of baits containing molasses on bees and an experiment on feeding poisoned hoppers to four weeks old chicks. Both experiments gave negative results.

Mr. Banning: Dr. J. R. Parker will now give us a summary of the 1936 campaign.

Dr. Parker: I believe I can best accomplish my purpose by presenting these tables.







Comparison of Grasshopper Bait Requirements for 1936 and 1937

State	Tons Bait used 1936	Tons Bait Estimated Needed, 1936	Tons Bait Estimated Needed, 1937
Ariz.	50	283	212
Ark.	116	no est.	356
Cal.	100	29	281
Colo.	1740	658	3191
Idaho	22	10	61
Ill.	800	no est.	8398
Iowa	4463	2444	16086
Kan.	4834	4744	4700
Minn.	124	110	520
Mich.	390	765	1216
Mo.	2700	no est.	3863
Mont.	3500	6271	7758
Neb.	2873	3922	11183
New Mex.	25	27	50
Nev.	10	143	50
N. Dak.	673	8738	13812
Ore.	80	182	50
Okla.	2000	no est.	1301
S. Dak.	706	869	3837
Utah	34	95	413
Wis.	700	1572	1641
Wyo.	1011	969	2293
Totals	27,963	31,831	81,352

GRASSHOPPER BAIT MATERIALS ON HAND AND COST OF  
ADDITIONAL MATERIALS ESTIMATED AS NEEDED FOR  
1937 CONTROL CAMPAIGN

State	Tons bait needed in 1937	Bait On Hand Tons : Sodium : mixed : bran : arsenite : bait : : gallons	Materials To Buy Tons : Sodium : bran : arsenite : : : gallons	Cost of addition- al bait materials in dollars (\$25 per ton)
Ariz.	212	:	212 : 2,120	\$ 5,300.00
Ark.	356	:	356 : 7,828	7,654.00
Cal.	281	:	281 : 1,405	6,533.25
Colo.	3,191	15 :	3,176 : 31,910	79,452.50
Idaho	61	345 :	:	:
Ill.	8,398	:	8,398 : 83,980	209,950.00
Iowa	16,086	143 : 125	15,818 : 159,610	395,950.50
Kan.	4,700	:	4,700 : 30,000	107,000.00
Minn.	520	500 :	20 : 11,000	430.00
Mich.	1,216	120 :	1,096 : 5,450	25,912.50
Mo.	3,863	175 :	3,688 : 38,630	92,812.50
Mont.	7,758	379 : 765	6,614 : 8,470	165,063.00
Nebr.	11,183	197 :	10,986 : 1,970	274,650.00
New Mex.	50	:	50 : 500	1,250.00
Nev.	50	108 :	:	:
N. Dak.	13,812	2,675 : 1660	7,819 : 114,050	168,108.50
Ore.	50	:	50 : 500	1,250.00
Okla.	1,301	435 :	866 : 13,300	18,619.00
S. Dak.	3,837	900 :	2,937 : 29,370	73,425.00
Utah	413	40 :	3,373 : 3,730	9,325.00
Wis.	1,641	:	1,641 : 25,000	35,281.50
Wyo	2,273	481 : 480	1,312 : 10,741	30,720.65
Total	81,352	5,463 : 4515	70,383 : 241,347	\$1,601,687.90







Mr. Banning: I will now ask Dr. Annand to lead the discussion on Research Problems.

Dr. Annand: There are still many problems needing solution. Considerable detailed work is needed on survey methods to cover variations in ecological conditions and variable habits of some species. Many new problems arise as we attempt to apply the survey methods developed in the western states to other areas. There is always a need for investigations looking toward cheaper and more efficient baits. Also investigations to determine the merits of oils, various poisons and attractants. We are greatly in need of a cheaper bait and some cheap method of application for use on range land. We are also in need of some good work on the biologies of the range and other little known species. It seems that possible methods of preventing outbreaks should receive as much consideration as methods of controlling epidemic outbreaks.

Dr. Parker: We have an active project that touches upon the causes of outbreaks. In our intensive area studies we are attempting to correlate grasshopper population changes with weather conditions, changes in flora and other ecological conditions. We are also conducting a number of bait studies, giving special attention to possible bran substitutes. Low grade (Red Dog) flour seems to be the best we have found so far. Fifteen pounds of this flour + saw dust equal in volume to 100 pounds of bran make a good substitute and can be obtained for about \$10.00. Dr. Parker also commented on the range problem and presented pictures which showed a good growth of grass inside grasshopper tight cages in contrast to almost bare soil outside where stock was fenced out and 'hoppers alone did the grazing. We are attacking the prevention problem in our survey system. In this way we hope to locate certain dangerous or problem areas. Then if through cooperation with the states the farmers in these areas can be taught or otherwise induced to control local outbreaks, major outbreaks will not occur. This may not be so simple on the range. Camnula, however, responds very well to this treatment.

Dr. Annand: We would like to hear what some of the states are doing along this line.

Dr. Drake: We are doing a little work with baits, principally along toxicological lines, some work on the biologies of certain species and on surveys and distribution methods; also on the wildlife and conservation problems.

Mr. Corkins: We have no research project, but need some work on range land species.

Dr. Whitehead: Oklahoma is doing some work on baits. So far bran, sawdust, water and sodium arsenite has proven to be the cheapest and as good as any we have tried. We are investigating the possibility of using cotton seed hulls as a substitute for bran. To date results have been variable.

Aamodt: Minnesota is cooperating with the Bureau on their intensive area studies in Minnesota.

Strand: In Montana we cooperate with and depend upon the government staff at Bozeman.

Swenk: We have a long time project on grasshopper control and we are investigating the possibility of developing cheaper and more effective baits. We are also studying the geographical distribution and food habits of the different species found in Nebraska.

Chambers: Our department does not do research work but we do demonstrate and have demonstrated the whey-saw dust mixture can be substituted for the bran-saw dust mixtures. Dr. Wilson of the University of Wisconsin is studying the effect of bait on poultry.







Flint: Illinois is continuing the work with oil baits and we are also investigating the possibility of developing a cheaper bait and other carriers for the poison. We are also interested in the possible development of a cheap flourine compound.

Wilbur: There is no special grasshopper project in Kansas as most of our work is divided on a crop basis. Dr. Painter of the Experiment Station is obtaining some interesting data on the apparent grasshopper resistance shown by some hybrid strains and varieties of corn and sorgum.

Haseman: We have no project in Missouri but we are doing some work on baits, carriers and poisons.

McCampbell: No active project in Colorado, however, we are conducting some studies on the life-history and ecology of Dissostertia longipennis and on the nutritive value of various species as poultry food.

Paul: In western Canada we have some intensive area studies looking towards the prevention of outbreaks, and survey methods are receiving considerable attention. We also have a project underway in which we are studying methods of appraising grasshopper losses and evaluating the benefits of control measures.

At the request of Dr. Parker, Mr. Paul cited two excellent examples of the successful use of cultural methods by which strikingly different results were secured by farmers who did and did not follow the cultural control methods which were recommended. The best results were largely obtained by farm planning so as to plant fewer acres and take better care of them and by the timely destruction of 'hoppers on land that was being summer fallowed.

Evening Session, Friday 7:45 p. m.  
Secretary Ray Murray, Presiding.

Mr. Murray: The next item on our program calls for a discussion of the present chinch bug situation.

Illinois, J. H. Bigger: Illinois experienced spotted damage over about one-third of the state. The farmers used creosote line and paper barriers, the latter made mostly of tarred felt paper worked very nicely. At present about one-third of the state rates No. 3 (Heavy). A border strip around this area rates a No. 2. The infestation is about the same as in the fall of 1933 both in area infested and intensity. Illinois used 3 million gallons of creosote in 1934 and with similar weather conditions in 1937, we might need between 2 and 3 million gallons.

Indiana, C. M. Packard: A moderate infestation exists in between 15 and 20 counties of western and northwestern Indiana. The situation is similar to that occurring in the fall of 1933, but the infested area is slightly smaller. In a recent letter Mr. Parks of Ohio stated that they observed some bugs at silo filling time and are anticipating possible light to moderate spotted infestations.

Iowa, G. C. Decker: Preliminary results of our survey indicate that conditions now are about the same as last fall and in the fall of 1933. In all 58 counties are infested; 28 (heavy rating 3 and 4), 15 counties moderate (rate 2) and 13 counties light (rate 1). Our potential creosote need is 2,562,000 gallons, but weather conditions this winter and next spring will largely determine how much will be needed.







Kansas, D. A. Wilbur: About 2,600 miles of barrier were constructed in Kansas this year. At present about 15 counties in southwest Kansas are dangerously infested.

Minnesota, T. L. Aamodt: Slight chinch bug damage was reported in only one county this year. Moderate numbers of bugs in hibernation were found near Hay Creek but no serious trouble is expected.

In Minnesota, the forest tent caterpillar is the most threatening pest for 1937. Under present plans the state will furnish lead arsenate to groups of farmers who have set up a suitable organization and have the necessary machinery to conduct a good campaign.

Missouri, G. D. Jones: There were 3 or 4 spots in the state where barriers were needed this year and in a few cases old bugs destroyed small grain fields in the spring. No survey has been made this fall but the infestation appears to be fairly general over the north half of the state. This is about the same area infested in the fall of 1933 but we feel that the population is probably not quite so large. In 1934 we used 1,250,000 gallons of creosote and might need that much next year.

Nebraska, O. S. Bare: We did not have any serious trouble this year but five or six counties in southeast Nebraska are now heavily infested. It is possible that we might need 200,000 or 300,000 gallons of creosote next year.

Oklahoma, F. E. Whitehead: The infestation this fall is three times as intense as it was a year ago. However, we always have chinch bugs in Oklahoma and can never be sure what will happen. As a rule barriers are not very effective because the bugs usually mature and fly out of the grain fields.

Wyoming, C. L. Corkins: We do not have chinch bugs to contend with but I would like to call attention to one of the serious pests of Wyoming and nearby states. I believe that the Mormon cricket, more so than any pest so far mentioned, should be regarded as a problem child of the federal government. Because in many cases the crickets breed up in and move out of the government domains.

Mr. Haseman: Spoke briefly of his experience with winter barley which is extensively used as a fall and winter pasture crop in Missouri. The bugs like it and go into it in large numbers in the spring, but it makes rapid growth and matures 2 or 3 weeks before wheat and thus assures a fair crop before the bugs hurt it. When heavily pastured in the spring the winter barley is exhausted and removed while the bugs are yet small and easily destroyed. We may have to change our opinion of this crop but at present it seems to answer the great need for a fall and winter pasture, provides a grain crop or spring pasture, and does not seem to be responsible for any rise in the chinch bug or hessian fly population.

Meeting recessed until 9:30 Saturday a.m.

Saturday Morning Session,

Secretary Ray Murray, Presiding.

Mr. Murray: If the meeting will please come to order we will have the report of the Resolutions Committee.

Mr. Swenk: As spokesman for the Committee presented the following report.







REPORT OF THE RESOLUTIONS COMMITTEE OF  
THE CONFERENCE OF STATE OFFICIALS CONCERNED WITH  
INSECT CONTROL OPERATIONS

Omaha, Nebraska, December 4 and 5, 1936.

Whereas, emergency Federal appropriations for aid in the control of regional insect outbreaks usually become available too late seasonally to be used with maximum efficiency and economy, therefore be it

Resolved, that this Conference urges that the 1937 Congress establish, and subsequent Congresses maintain, a fund of five million (\$5,000,000) dollars to be replenished to the original amount at the beginning of each fiscal year whenever such replenishment is necessary, to be available to and administered by the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture for the financing through advance options, or storage, and subsequent distribution to the affected States, through cooperation with the proper officials of the States concerned and upon adequate set-off commitments of these States, of insecticides and other usable materials, equipment, transportation, distribution and application, administrative costs and other expenses incidental to accomplishing the control of grasshoppers, chinch bugs, and other insect pests similarly subject to interstate migratory movements, or intermittent regional outbreaks affecting several States (but exclusive of purely intrastate or local outbreaks), or emergency insect outbreaks that threaten the agricultural interests of several States, if and when the need and desirability for such Federal aid is satisfactorily established through the approval of competent technical committees, the Secretary of Agriculture and other proper governmental agencies; and

Whereas, fundamental research is the essential basis of further progress toward the solution of the more pressing problems of grasshopper control, and at the present time the Federal and State research programs along this line are much too restricted and exceedingly inadequately supported financially, therefore be it

Resolved, that a more intensive and extensive long-time research program on grasshopper biology, ecology and control be inaugurated and carried out, both by the several infested States and the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture, with special emphasis upon the fundamental factors that cause grasshopper epidemics, and including grasshopper surveys and studies designed to develop cheaper and more effective poisoned baits; and

Whereas, various species of grasshoppers have since 1933 destroyed millions of acres of range and grassland forage and have been responsible for great additional financial losses to stockmen, occasioned by the forced sale or movement of live stock, and

Whereas, the control of range grasshoppers is of extreme importance in any intelligent soil conservation and range management program, and in the prevention of soil erosion, and

Whereas, control of these range grasshoppers is at the present time apparently not always economically profitable, and

Whereas, knowledge as to the habits, life histories and ecological relations of these species is very fragmentary, therefore be it

Resolved, that the United States Department of Agriculture be urged to continue and to expand its investigational work on the range species of grasshoppers, and from time to time carry out such large scale experiments on actual control as may seem desirable, and that such additional funds as may be necessary be appropriated to the Department of Agriculture by the Congress for the accomplishment of these objects.







(Submitted by a Committee consisting of Chambers (Wis.), Drake (Iowa), Flint (Ill.), Kelly (Kansas), Stiles (Okla.), Strand (Mont.), Swenk (Nebr.), Chairman, and unanimously adopted on Dec. 5, 1936, by the delegates representing the States of Wis., Ill., Minn., Iowa, Mo., S. Dak., Nebr., Kans., Okla., Mont., Wyo., and Colo.)

Mr. Swenk: Mr. Chairman, I move the adoption of this report. Seconded by Dr. Drake - carried by unanimous vote.

Mr. Aamodt, presented and moved the adoption of the following resolution:

Whereas, the success of grasshopper control campaigns is absolutely dependent upon adequate surveys, and

Whereas, any weakening of the present survey system, due to lack of financial support or other causes, would greatly disturb if not completely wreck the grasshopper control programs of the infested states and eventually necessitate drastic action to continue in force this most important prerequisite to effective grasshopper control work, therefore be it

Resolved that this conference respectfully requests the Bureau of Entomology and Plant Quarantine, to continue the valuable and important work now being done in cooperation with the various states, and that Congress appropriate to the Department of Agriculture such additional funds as may be needed to extend this work into states not included in the survey program at the time the original appropriation for grasshopper survey work was made, and be it further

Resolved that we highly commend Dr. P. N. Annand, Dr. J. R. Parker, Mr. R. E. Shotwell and their associates in the Bureau of Entomology and Plant Quarantine for the generous and splendid cooperation they have given to the states on the important survey project and for the highly satisfactory and expedient manner in which they have handled the distribution of grasshopper bait and bait materials.

Seconded by McCampbell.

Mr. Swenk, speaking for the Resolutions Committee, explained that they spent so much time in formulating the resolutions which were presented that the resolution just presented and the usual courtesy resolutions were inadvertently omitted, and that he felt sure all of the Committee heartily indorse and approves the sentiment of Mr. Aamodt's resolution.

Motion passed and resolution adopted by unanimous vote.

Mr. Strand: Nominated Dr. C. J. Drake as Chairman of a legislative committee to represent the group in presenting the resolutions just adopted before the proper government officials and the 1937 Congress. On a motion by Corkins, seconded by Chambers, nominations were closed and the secretaries were instructed to cast a unanimous ballot for Dr. Drake. The motion was carried.

Mr. Strand: Moved (seconded by Corkins) that Dr. Drake be authorized to appoint the other members on the legislative committee. Carried.

On motion by Kelly, seconded by Whitehead the meeting adjourned.

NOTE: The text of this report (except Resolutions) is subject to errors by the secretary and remarks contained herein should not be quoted without the consent of the person to whom the remark is attributed. G.C.D.







REGISTRATION RECORD

State	Name	Address	Institution Represented
COLORADO			
	McCampbell, Sam	Ft. Collins, Colo.	Ext. Serv., Colo. Agr. Col.
DISTRICT OF COLUMBIA			
	Annand, P. N.	Washington, D. C.	U.S.D.A. & Bur. P. Q.
	Rohwer, S. A.	" " "	" "
ILLINOIS			
	Bigger, J. H.	Jacksonville, Ill.	Ill. Nat. Hist. Survey
	Farrar, M. D.	Urbana, Ill.	" " " "
	Flint, W. P.	" "	" " " "
INDIANA			
	Packard, C. M.	Lafayette, Ind.	U.S.D.A. & Bur. P. Q.
IOWA			
	Andre, Floyd	Ames, Iowa	Iowa State College
	Bennett, L. J.	" "	U.S.D.A. & Bur. Biol. Sur.
	Decker, G. C.	" "	Iowa State College
	Drake, C. J.	" "	State Entomologist, Iowa
	Hendrickson, G. O.	" "	Iowa State College
	Murray, Ray	Des Moines	Iowa Dept. of Agriculture
KANSAS			
	Kelly, E. G.	Manhattan, Kansas	Kansas State College
	Wilbur, D. A.	" "	" " "
MINNESOTA			
	Aamodt, T. L.	St. Paul, Minn.	State of Minnesota
MISSOURI			
	Haseman, Leonard	Columbia, Mo.	Univ. of Mo.
	Jones, Geo. D.	" "	" "
MONTANA			
	Butcher, F. D.	Bozeman, Mont.	U.S.D.A. & Bur. P. Q.
	Parker, J. R.	" "	" "
	Shotwell, R. L.	" "	" "
	Strand, A. L.	" "	State of Montana
NEBRASKA			
	Banning, W. B.	Lincoln, Neb.	State Dept. Agr.
	Bare, O. S.	" "	Ext. Serv. Univ. Neb.
	Blonder, W. B.	Omaha, Neb.	Great Western R.R.
	Gates, L. M.	Lincoln, Neb.	State Dept. Agr.
	Roberts, Raymond	" "	Dept. Ent. Univ. Neb.
	Swenk, Myron H.	" "	" " " "
	Whelan, D. B.	" "	" " " "







State	Name	Address	Institution Represented
OKLAHOMA			
	Bieberdorf, G. F.	Stillwater, Okla.	Okla. A. & M. College
	Stiles, C. F.	" "	" "
	Whitehead, F. E.	" "	" "
SOUTH DAKOTA			
	Thompson, L. I.	Brookings, S.D.	So. Dak. St. College
WISCONSIN			
	Chambers, E. L.	Madison, Wis.	St. Dept. Agr. & Mkts.
WYOMING			
	Corkins, C. L.	Powell, Wyo.	State of Wyoming
CANADA			
	Paul, L. C.	Saskatoon, Sask.	Canadian Ent. Br.
ARGENTINA			
	Rosenbusch, Carlos	Buenos Aires	Argentina Rural Society



State	Name	Address	Institution Represented
OKLAHOMA			
	Richardson, J. W.	Stillwater, Okla.	Okla. A. & M. College
	Wilson, C. W.	"	"
	Wickham, L. E.	"	"
SOUTH CAROLINA			
	Thompson, L. L.	Rockledge, S. C.	St. Paul, S. C. College
WISCONSIN			
	Chapman, L. L.	Madison, Wis.	St. Paul, S. C. College
UTAH			
	Carlson, C. L.	Powell, W.	State of Wyoming
CANADA			
	Paul, L. L.	Montreal, Can.	Canadian Nat. Ex.
ARGENTINA			
	Montgomery, Carlos	Buenos Aires	Argentine Nat. Ex.